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Molecular and biological properties of vascular endothelial growth factor.

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Vascular endothelial growth factor (VEGF) is a fundamental regulator of normal and abnormal angiogenesis. Recent evidence indicates that VEGF is essential for embryonic vasculogenesis and angiogenesis. Furthermore, VEGF is required for the cyclical blood vessel proliferation in the female reproductive tract and for longitudinal bone growth and endochondral bone formation. Substantial experimental evidence also implicates VEGF in pathological angiogenesis. Anti-VEGF monoclonal antibodies or other VEGF inhibitors block the growth of many tumor cell lines in nude mice. Furthermore, the concentrations of VEGF are elevated in the aqueous and vitreous humors of patients with proliferative retinopathies such as the diabetic retinopathy. In addition, VEGF-induced angiogenesis results in a therapeutic benefit in several animal models of myocardial or limb ischemia. Currently, both therapeutic angiogenesis using recombinant VEGF or VEGF gene transfer and inhibition of VEGF-mediated pathological angiogenesis are being pursued.

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